

NREL Introduction & Overview

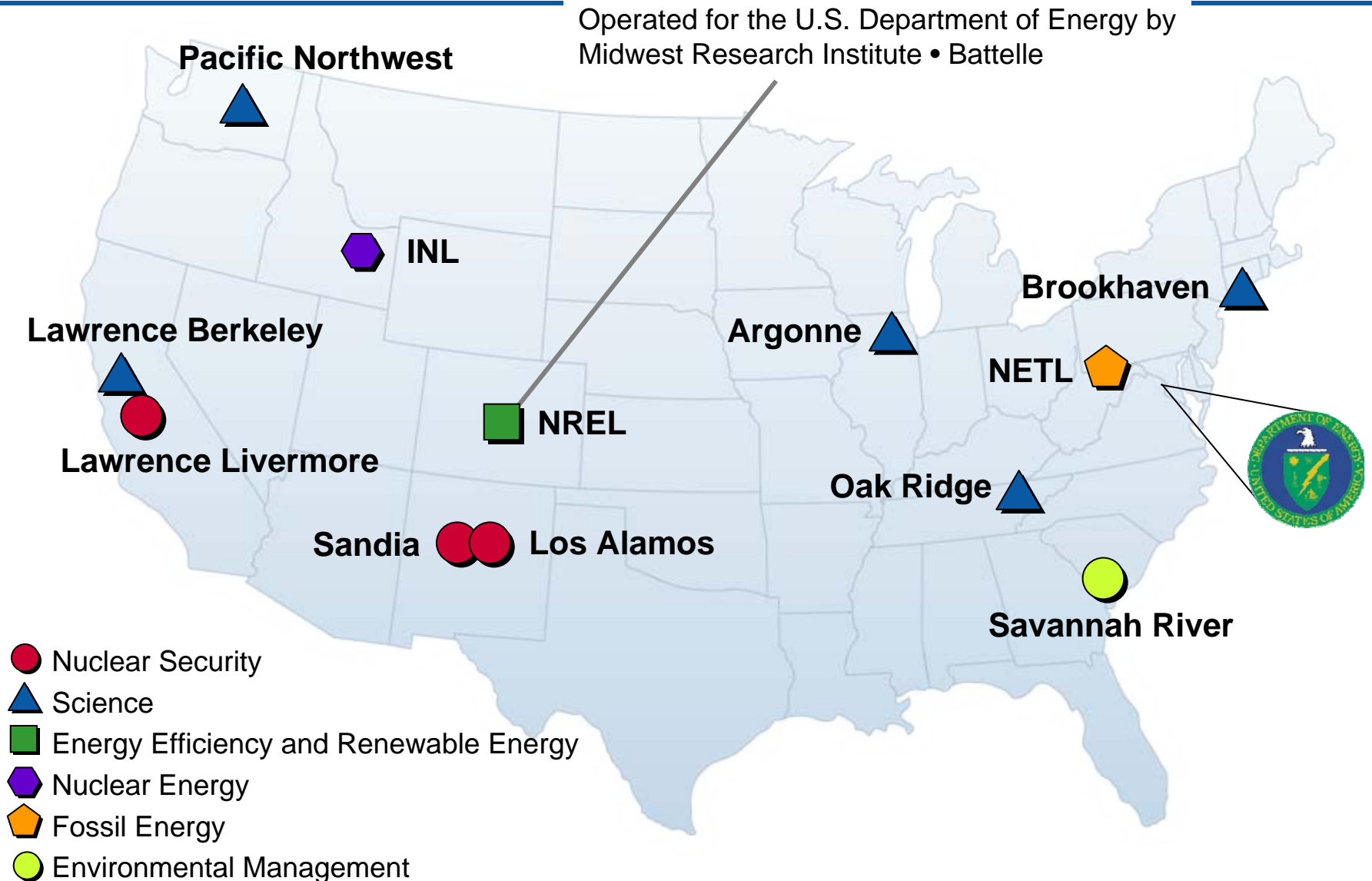


**NREL-ESRL
Seminar Series**

**Dr. M. A. Pacheco
V.P. – Deployment &
Industry Partnership**

October 30, 2008

Major DOE National Laboratories



What Makes NREL Unique?

- Only national laboratory dedicated to renewable energy and energy efficiency R&D
- Collaboration with industry and university partners is a hallmark
- Ability to link scientific discovery and product development to accelerate commercialization



Scope of NREL's R&D Programs



Efficient Energy Use

- Vehicle Technologies
- Building Technologies
- Industrial Technologies



Renewable Resources

- Wind and water
- Solar
- Biomass
- Geothermal



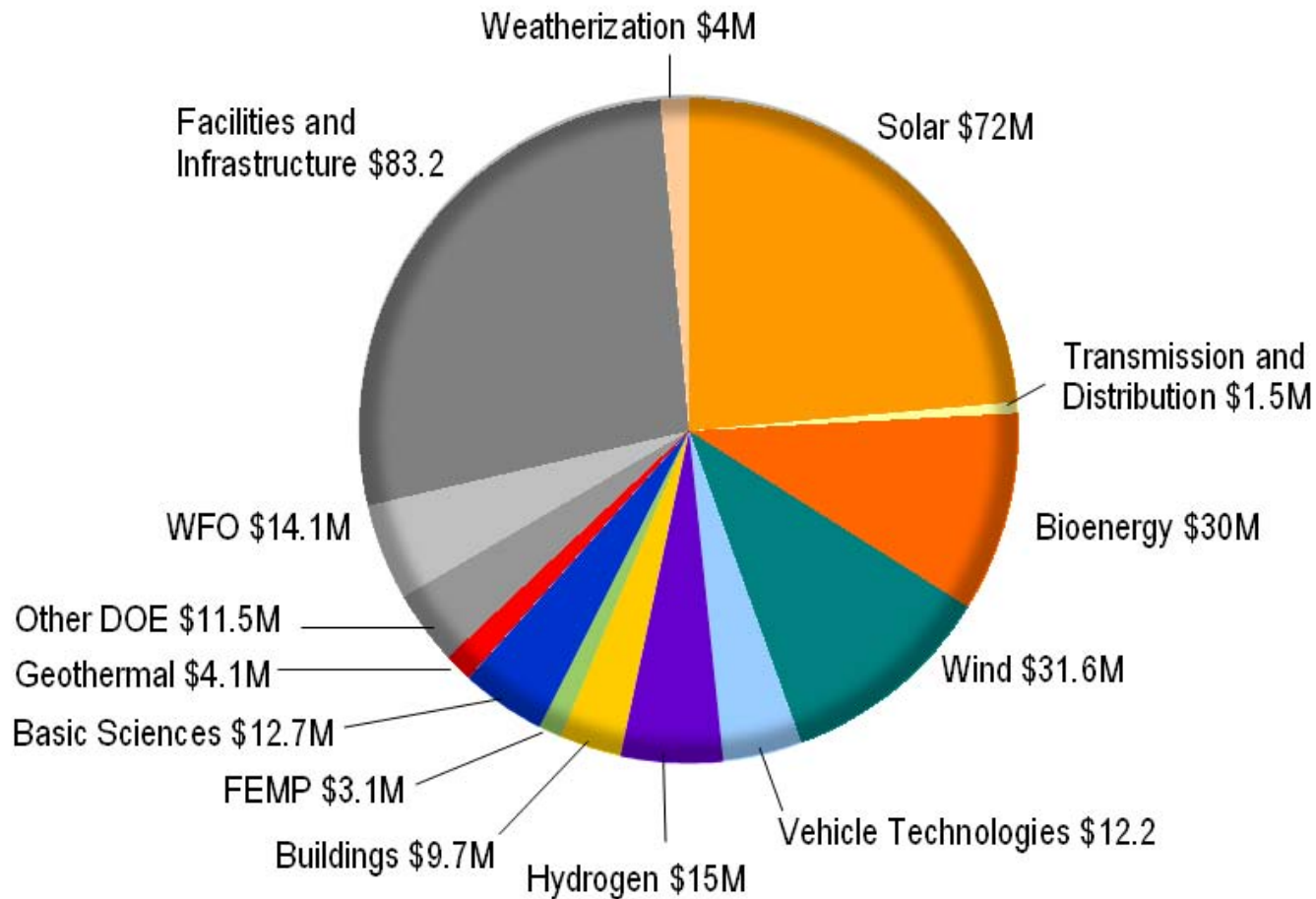
Energy Delivery and Storage

- Electricity Transmission and Distribution
- Alternative Fuels
- Hydrogen Delivery and Storage

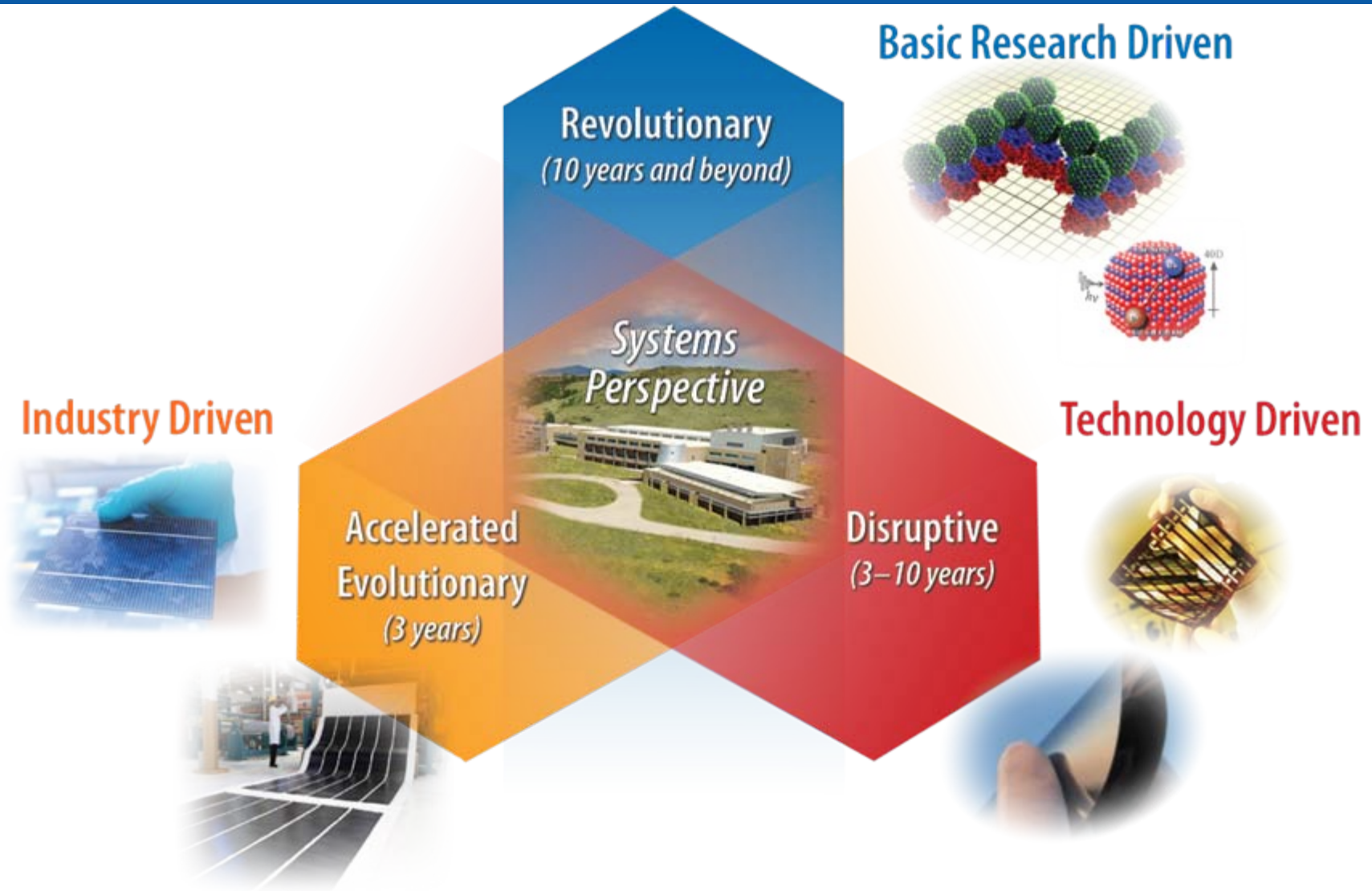
Foundational Science and Advanced Analytics

NREL Program Portfolio

FY08 Program Portfolio



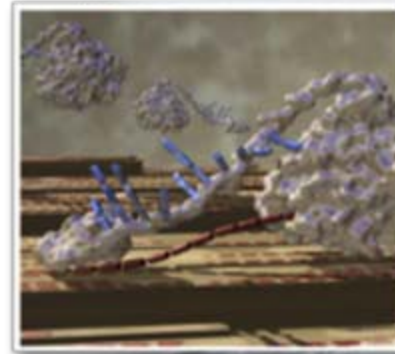
From Evolutionary to Revolutionary



Technology Innovation Challenges Remain

To Achieve the Next Generation

- Wind Turbines
 - Improve energy capture
 - Expand to lower wind speeds
- Biofuels
 - Broaden slate of feed stocks
 - Reduce costs
 - Produce compatible products
- Solar Systems
 - Improve efficiency
 - Reduce costs
 - New materials, manufacturing processes, and concentration
 - Nanostructures
- Zero Energy Buildings
 - Building systems integration
 - Computerized building energy optimization tools



NREL Informs U.S. Policy Makers

Electricity

Gigawatt-Scale Renewables

Solar Goal

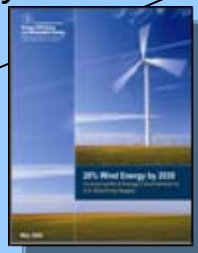


PV cost of electricity parity by 2015



• Wind Vision

20% U.S. wind electricity by 2030



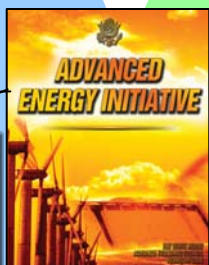
• Buildings

Net-Zero Energy at low incremental cost by 2025



• State RPS Goals

Renewable electricity capacities



Infrastructure



• TEAM Initiative

DOE meets or exceeds E.O. 13423

Fuels

• Ethanol Cost Goal

Cellulosic ethanol cost competitive by 2012



• Battery Initiative

40 mile all electric range for PHEVs



• Hydrogen Fuel Initiative

- Technology Readiness by 2015
- FCVs in showrooms by 2020



• President's "20-in-10"

35 billion gallons of alternative fuels by 2017



• Energy Independence & Security Act 2007

36 billion gallons of renewable fuels by 2022



• DOE "30x30 Goal"

60 billion gallons of ethanol by 2030



Promise of renewable energy is profound and can be realized if we...

- 
- Aggressively seek a sustainable energy economy
 - Accelerate investment in technology innovation
 - Acknowledge and mitigate the carbon challenge with the necessary policies

It is a matter of national will and leadership



Visit us online at www.nrel.gov

Operated for the U.S. Department of Energy Office of Energy Efficiency and Renewable Energy by Midwest Research Institute • Battelle